

In the claims:

1. A stereoscopic image encoding and decoding device,
comprising:

a stereoscopic image encoding device and a
stereoscopic image decoding device, wherein

5 said stereoscopic image encoding device includes
a stereoscopic image pre-processor for
multiplexing left-eye images and right-eye images and
forming one image, and

10 an image encoding unit for encoding said one
image processed by the stereoscopic image pre-processor,
while

said stereoscopic image decoding device includes
an image decoding unit for decoding said one
image encoded by the image encoding unit, and

15 a stereoscopic image post-processor for
separating said one image decoded by the image decoding
unit into the left-eye images and the right-eye images.

2. The stereoscopic image encoding and decoding
device as set forth in claim 1, wherein

the left-eye images are arranged in odd lines and
the right-eye images are arranged in even lines, or the
5 right-eye images are arranged in the odd lines and the
left-eye images are arranged in the even lines, so to
form one image as an interlace image,

when an optimum block is selected, from the block
formed by the data in the odd lines and the even lines
10 and the block formed by the data only in the odd lines
or only in the even lines, and further, an optimum
prediction method is selected, from frame prediction
from forward and backward frames or field prediction
from forward and backward fields,

15 an error between the predicted block data and the
block data is orthogonally transformed, quantized, and
variable-length encoded, and as a result, the block and
the prediction method having the minimum code amount of
said block data are selected.

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3. A stereoscopic image encoding and decoding device,
comprising

a stereoscopic image encoding device and a
stereoscopic image decoding device, wherein

5 said stereoscopic image encoding device includes
a stereoscopic image pre-processor for
multiplexing left-eye images, right-eye images, and high
resolution added images for turning the left-eye images
or the right-eye images to the images of high resolution
10 and forming one image, and

an image encoding unit for encoding said one
image processed by the stereoscopic image pre-processor,
while

said stereoscopic image decoding device includes

15 an image decoding unit for decoding said one
image encoded by the image encoding unit, and
 a stereoscopic image post-processor for
separating said one image decoded by the image decoding
unit into the left-eye images, the right-eye images, and
20 the high resolution added images for turning the left-
eye images or the right-eye images to the images of high
resolution.

4. The stereoscopic image encoding and decoding
device as set forth in claim 3, wherein

 ones of the left-eye images, the right-eye images,
and the high resolution added images are arranged in a
5 left 1/3 portion of one image, the other ones are
arranged in a middle portion of said one image, and
further the other ones are arranged in a right 1/3
portion of said one image.

5. The stereoscopic image encoding and decoding
device as set forth in claim 3, wherein

 ones of the left-eye images, the right-eye images,
and the high resolution added images are arranged in a
5 top 1/3 portion of one image, the other ones are
arranged in a middle portion of said one image, and
further the other ones are arranged in a bottom 1/3
portion of said one image.

6. The stereoscopic image encoding and decoding device as set forth in claim 3, wherein

5 when the high resolution plane images are the left-eye images, ones of the right-eye images and the high resolution plane images formed by the left-eye images and the high resolution added images for turning the left-eye images to the high resolution images, are arranged in the left 1/3 to 2/3 portion of one image and the other ones are arranged in the right 1/3 to 2/3
10 portion of said one image,

when the high resolution plane images are the right-eye images, ones of the left-eye images and the high resolution plane images formed by the right-eye images and the high resolution added images for turning
15 the right-eye images to the high resolution images, are arranged in the left 1/3 to 2/3 portion of one image and the other ones are arranged in the right 1/3 to 2/3 portion of said one image.

7. A stereoscopic image encoding and decoding device, comprising

a stereoscopic image encoding device and a stereoscopic image decoding device, wherein

5 said stereoscopic image encoding device

multiplexes the left-eye images and the high resolution added images for turning the left-eye images to the high resolution images so to form one first image,

and multiplexes the right-eye images and dummy images so
10 to form one second image, when the high resolution plane
images are the left-eye images,

 multiplexes the right-eye images and the high
resolution added images for turning the right-eye images
to the high resolution images so to form one first image,
15 and multiplexes the left-eye images and the dummy images
so to form one second image, when the high resolution
plane images are the right-eye images, and

 further a stereoscopic image pre-processor for
combining said first image with said second image to
20 form one third image, and

 an image encoding unit for encoding said one
third image processed by the stereoscopic image pre-
processor, are provided, while

 said stereoscopic image decoding device includes

25 an image decoding unit for decoding said one
third image encoded by the image encoding unit, and

 a stereoscopic image post-processor for
separating said one third image decoded by the image
decoding unit into one first image consisting of the
30 left-eye images and the high resolution added images and
one second image consisting of the right-eye images and
the dummy images, further separating said one first
image into the left-eye images and the high resolution
added images, and separating said one second image into
35 the right-eye images, when the high resolution images

are the left-eye images, and

for separating said one third image decoded by
the image decoding unit into one first image consisting
of the right-eye images and the high resolution added
40 images and one second image consisting of the left-eye
images and the dummy images, separating said one first
image into the right-eye images and the high resolution
added images, and further separating said one second
image into the left-eye images, when the high resolution
45 images are the right-eye images.

8. The stereoscopic image encoding and decoding
device as set forth in claim 7, wherein

the first image is arranged in the odd lines and
the second image is arranged in the even lines, or the
5 second image is arranged in the odd lines and the first
image is arranged in the even lines, and the third image
is defined as an interlace image, and

the dummy image is defined as "0" data.

9. The stereoscopic image encoding and decoding
device as set forth in claim 7, wherein

the first image is arranged in the odd lines and
the second image is arranged in the even lines, or the
5 second image is arranged in the odd lines and the first
image is arranged in the even lines, and the third image
is defined as an interlace image, and

the dummy image is set at the same value as pixel data at a left side or pixel data at a right side.

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10. The stereoscopic image encoding and decoding device as set forth in claim 7, wherein

the first image is arranged in the odd lines and the second image is arranged in the even lines, or the second image is arranged in the odd lines and the first image is arranged in the even lines, and the third image is defined as an interlace image, and

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the dummy image is set at the average value of the pixel data at the left and the pixel data at the right.

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11. The stereoscopic image encoding and decoding device as set forth in claim 10, wherein

the dummy image in a leftmost column on a screen or in a rightmost column is defined as "0" data.

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12. The stereoscopic image encoding and decoding device as set forth in claim 10, wherein

the dummy image in the leftmost column on the screen is set at the same value as the right pixel data thereof, or the dummy image in the rightmost column on the screen is set at the same value as the left pixel data thereof.

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13. The stereoscopic image encoding and decoding device as set forth in claim 3, wherein

ones of the left-eye images, the right-eye images, and the high resolution added images, are arranged in two of the odd lines of the $(3n+1)$ th frame (n is an integer of 0 and more), the even lines of the $(3n+1)$ th frame, the odd lines of the $(3n+2)$ th frame, the even lines of the $(3n+2)$ th frame, the odd lines of the $(3n+3)$ th frame, and the even lines of the $(3n+3)$ th frame,

the other ones are arranged in the other two of the odd lines of the $(3n+1)$ th frame, the even lines of the $(3n+1)$ th frame, the odd lines of the $(3n+2)$ th frame, the even lines of the $(3n+2)$ th frame, the odd lines of the $(3n+3)$ th frame, and the even lines of the $(3n+3)$ th frame,

further the other ones are arranged in further the other two of the odd lines of the $(3n+1)$ th frame, the even lines of the $(3n+1)$ th frame, the odd lines of the $(3n+2)$ th frame, the even lines of the $(3n+2)$ th frame, the odd lines of the $(3n+3)$ th frame, and the even lines of the $(3n+3)$ th frame, and

the images arranged in the odd lines and the even lines of the same frame are defined as interlace images.

14. The stereoscopic image encoding and decoding device as set forth in claim 13, wherein

ones of the left-eye images, the right-eye images,

5 and the high resolution added images are arranged in the
odd lines of the $(3n+1)$ th frame and the even lines of
the $(3n+2)$ th frame (n is an integer of 0 and more), the
other ones are arranged in the even lines of the
 $(3n+1)$ th frame and the odd lines of the $(3n+3)$ th frame,
and further the other ones are arranged in the odd lines
10 of the $(3n+2)$ th frame and the even lines of the $(3n+3)$ th
frame, and the images arranged in the odd lines and the
images arranged in the even lines of the same frame are
defined as interlace images.

15. A stereoscopic image encoding and decoding device,
in which

a flag identifying a stereoscopic image stream is
inserted into a encoded transmission and record stream,
5 on a side of encoding, and

the identification of the stereoscopic image
stream is detected by detecting said flag, and decoded
and post-processed as the stereoscopic image, on a side
of decoding.

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16. A stereoscopic image encoding and decoding device,
in which

a flag indicating which image forms the stream,
of only a plane image, only a stereoscopic image, a
5 stereoscopic image and plane image, a stereoscopic image
and high resolution plane image, and a stereoscopic

image and high resolution plane added image, is inserted into a encoded transmission and record stream, on the side of encoding, and

10 of only the plane image, only the stereoscopic image, the stereoscopic and plane image, the stereoscopic and high resolution plane image, and the stereoscopic image and high resolution added image, which image forms the stream is detected by detecting
15 said flag, and the image is decoded and post-processed, according to the detected result, on a side of decoding.

17. A stereoscopic image encoding and decoding device, in which

 a flag indicating a multiplexing method of all or one of a plane image, a stereoscopic image, a high
5 resolution plane image, and a high resolution added image in the stream, is inserted into a encoded transmission and record stream, on a side of encoding, and

 the multiplexing method of all or one of the
10 plane image, the stereoscopic image, the high resolution plane image, and the high resolution added image in the stream, is detected by detecting said flag, and the image is decoded and post-processed, according to the detected result, on a side of decoding.

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18. The stereoscopic image encoding and decoding

device as set forth in claim 1, wherein

the multiplexing method includes all or one of:
whether the high resolution plane image or the high
5 resolution added image corresponds to the left-eye
images and/or the right-eye images, which data to be
arranged in the odd fields and the even fields in the
case of an interlace image, how to arrange continuous
data, and how to construct dummy data.

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19. The stereoscopic image encoding and decoding
device as set forth in claim 1, wherein

MPEG (Moving Picture Expert Group) method is used
as a encoding method.

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20. The stereoscopic image encoding and decoding
device as set forth in claim 1, wherein

MPEG method is used as a encoding method, and a
difference of the left-eye image and the right-eye image
5 is detected by every macro block; when the difference is
larger than a rated value, a field DCT is applied, while
when the difference is smaller than a rated value, a
frame DCT is applied.